

# hard core

THE JOURNAL  
OF THE  
BRITISH APPLE  
SYSTEMS  
USER GROUP

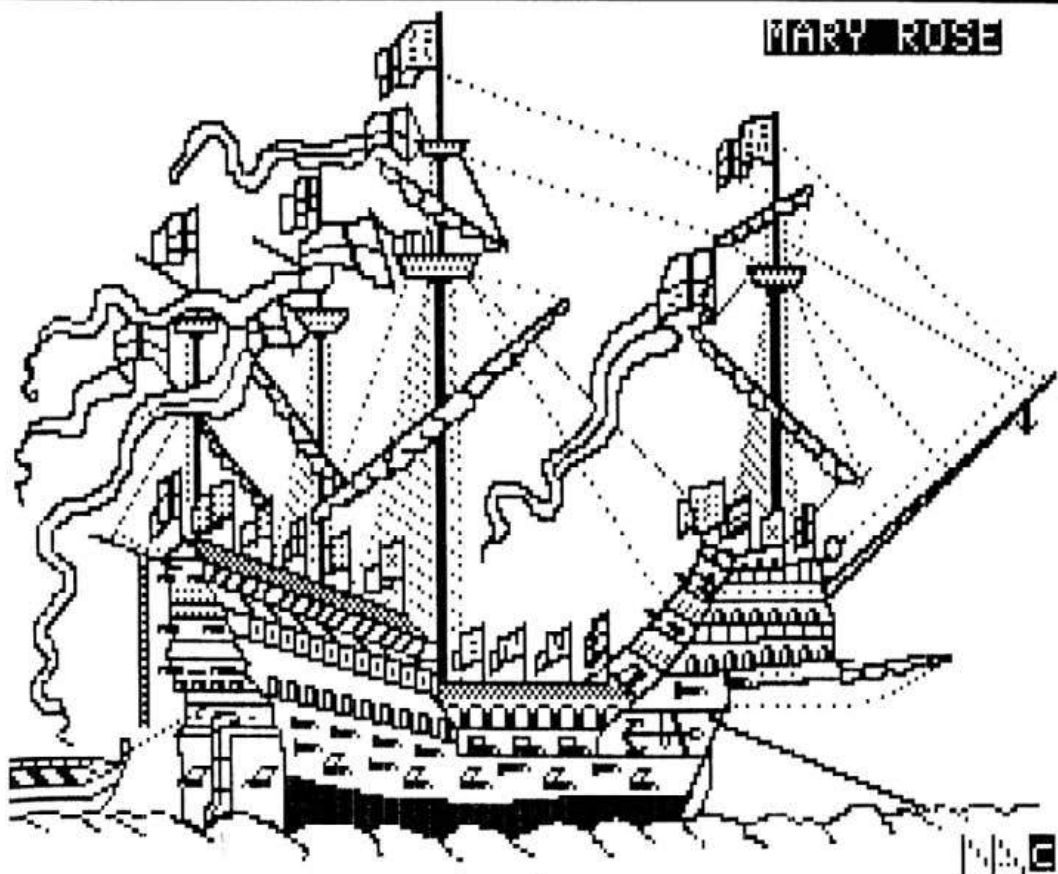


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THE JOURNAL OF

THE BRITISH APPLE SYSTEMS USER GROUP

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## CONTENTS

### Basug Committee

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4 Editorial	Tony Williams
Chairman's Corner	Bob Raikes
5 What are These File Buffer Things Anyway?	Cliff Wooton
12 Education	Norah Arnold
13 Why does Less cost more ?	Neville Ian Ash
15 Voice Based Learning	Tony Williams
18 Lonely Apples	
19 Epson & Applewriter II	Jim Panks
	David Archbold
22 Epson Printer Ribbons	Jim Panks
23 Visicalc Corner	Fran Teo
26 Disconnected Jottings	Quentin Reidford
27 Meetings & Workshops	
28 Readers Letters	
33 Membership Matters	Jim Panks
36 BASUG goes Hemeling	Tony Williams
37 Pascal for the Apple	Bob Raikes
38 Unlist trick	Craig Crossman
Applesoft Random number	
39 Easy Text Screen Dump	Ron Wrenholt/ Harry Brawley
40 Small Ads	
Diversi Dos BUG	
41 Micronet/ bad Disk News Seedlings	Tony Williams
42 Local Groups	
44 The Ins & Outs of the Apple II	Bob Raikes
46 Diary	

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The cover this month is a picture by Norah Arnold of the Mary Rose. Is Norah trying to make a point about the potential danger of new technology? If you can, get to see the colour original at a BASUG meeting.

## Editorial

I suppose it had to happen: the following passage has appeared in Maple Orchard, published by the Apple Users Group of Toronto:

Hardcore. This one wins the prize for the most controversial of the Apple-related publications. In the beginning, few reputable publications would even carry its advertisement (eh?) as its sole purpose was to disseminate information about how to break the copy protection codes on Apple software (eh? eh?). The magazine, which has a rather sporadic publishing schedule, does include some other articles. All-in-all it's not a bad publication, although not a great one either. Its strength lies in its description of disk operating systems.

They can't be talking about us, not us, although "rather sporadic schedule" is an unkind way of looking at what sometimes happens. Only at the end of the Maple Orchard article when the address is given as Tacoma, Wa. are our worst suspicions confirmed. We not only have a namesake in the USA, but one which apparently tries to live up to the rather scurrilous image suggested by the name Hard Core.

So what do we do? Well, we can send off our back numbers to even more groups throughout the world - we do it already but not enough apparently. They ought to convince anyone immediately that for all BASUG's sins, it is not a copying shop. Or we could rename the magazine "Hard Core 1" (like Jaws 1) to remind users that we were first, we think. Or we could rename it entirely.

You could bring this up at the AGM which - note this in your diaries - is on July 2, this year. There you will have the opportunity to haul us over the coals, and more importantly put yourselves forward as volunteer workers, writers, distributors, magazine renamers, anything. If you can't get there (a venue had not been settled at the time of writing this piece) send your proxy vote, or failing that a letter stating your ideas and suggested changes which you would like to be read out or taken into consideration at the meeting.

Your editor intends to put in a couple of days at Apple '83. Come and abuse him, if our "sporadic schedule" does not play up again.

## Chairman's Corner

Those of you who look at the first page of Hardcore will have noticed a number of changes in the composition of the committee.

One name that has changed has been on Page 3 since volume 1, no 1, the name of John Sharp. I know that all those that have come into contact with John since the founding of BASUG will join myself and the present committee in wishing him success in his new job and thanking him for the enormous amount of time and effort that he has put in to the group over the last two and a half years. I trust that he will succeed in making the manuals of the company that he is going to join much less inscrutable. John has promised not to leave us in the lurch, but will give us the benefit of his accumulated knowledge both of BASUG and the Apple.

Over the last 18 months John has been organising the day to day administration of the group. His change to new employment has meant that different arrangements have had to be made, and Fran Teo, previously the group's treasurer, has taken over the full-time administration. This will make no difference to the use of the PO Box, so carry on sending your orders and letters to PO Box 174. Our thanks go to Sheila and Sue for the work that they have done in running the group.

As Fran has left the committee in order to take up the Administrator's job, John Wellsman has become Honorary Treasurer. Norah Arnold has taken over the Hon. Secretary's job from John Sharp, and I have taken over the Chairman's role from her. These arrangements are, of course, only to take us up to the AGM.

The last year has seen a tremendous change in the way that BASUG has been organised. Proper accounting and administrative systems have been introduced, and the appearance of BASUG Ltd is now imminent. The foundations have been laid for the long term survival of the group. The direction that we go in will be up to you, the members, and the committee that you elect at the forthcoming AGM.

Those of you who attended the last AGM will remember how close we were to having too few members to be quorate. I hope that the change of venue and the attractions of a workshop will persuade more of you to come along to let us know your views. If you cannot come, please let us have your proxy votes.

# What Are These File Buffer Things For Anyway?

by Cliff Wooton

I was poking about in the DOS a while ago and was interested to see what was in the file buffers. As they each take 595 bytes of memory, I wanted to see what all the fuss was about.

When DOS wants to transfer a file from the disk to the main memory, (or vice versa) it uses these buffers as temporary storage of one sort or another. A buffer needs to be available for data logging although it does not actually transfer any information into the main memory, other than that put in the directory buffer. The reasons for this will be apparent when we see what is actually stored in the file buffer.

Apple DOS will build between 1 and 16 file buffers. If 0 is specified as the MAXFILES argument, then a range error will result. It will also result on specification of a value greater than 16. A default number of MAXFILES are set up when DOS is booted. This can be altered by patching the DOS before you create a new master or by getting at the appropriate sector with a DPATCH type utility.

If you are patching the DOS in RAM prior to an INIT then the byte to alter is at AAB1 in a 48k machine. Depending upon the type of disk used this can be stored at several places on the disk. This is summarised in the table shown in figure 1.

DISK TYPE	TRACK	SECTOR	BYTE
13 SECTOR MASTER	1	C	B1
13 SECTOR SLAVE	1	A	B1

Figure 1. D Patch Address for default file buffers.

I am not too sure about the 16 sector disk mapping as I have not yet got into 16 sector DOS as much as I would like, so I will not confuse the issue with it this time around. Whichever sector it is in, the value will probably be stored at byte B1.

However many file buffers there are, they all follow the same basic pattern and are built by a common routine. The buffer builder resides in the middle of DOS starting at 27D4 and finishing at 2850. This is the routine to modify if you don't want MAXFILES to garbage your programs. Figure 2 illustrates the basic structure of a single file buffer.

8	LINK POINTER TO FILE NAME OF NEXT BUFFER. 2 BYTES	---TOP
7	POINTER TO START OF DATA BUFFER. 2 BYTES	
6	POINTER TO START OF TRACK SECTOR BUFFER. 2 BYTES	
5	POINTER TO START OF MISC INFO. 2 BYTES	
4	FILENAME. 30 BYTES	
3	MISC INFO BUFFER. 45 BYTES	
2	TRACK AND SECTOR LIST BUFFER. 256 BYTES	
1	DATA BUFFER. 256 BYTES	---BOTTOM

Figure 2. One File Buffer.

As is obvious from Figure 2, the file buffers are broken down into 8 separate parts. I will attempt to explain them in order of appearance, starting from the lowest address and going up towards the highest.

## 1. THE DATA BUFFER.

When DOS transfers a file from memory to disk or vice versa, the RAM image may not occupy a multiple of 256 bytes. If not, the last sector stored on the disk will have less than a full page of memory. The unused bytes need to be set to zero, and furthermore must not be transformed directly into the memory otherwise they will wipe out the memory following the area to be loaded into. Let us assume that we are BSAVING a memory area, for

arguments sake \$6000 to \$61DA. The DOS will move page \$60 into the buffer and then onto the disk. The buffer will then be zeroed by the routine at the top end of DOS \$B7D6. This routine zeros the 256 bytes of memory whose base address is pointed at by monitor accumulator 4, \$42, \$43. When the buffer has been cleared, bytes \$6100 to 61DA are moved into the buffer. The whole process is controlled by some value stored in a buffer that is passed to DOS via the L\$nnnn part of a BSAVE command. When the first \$DA bytes of the buffer are filled, this is written to the next sector of the file. The process is exactly similar when a BLOAD is carried out, except that the L\$nnnn value is supplied from the file itself. The sectors are loaded from the disk into the buffer and then into the main RAM area. The last one having only the bytes 0:DA moved into the main RAM so as not to overwrite beyond the end of the memory area defined by the length of the file.

## 2 THE TRACK AND SECTOR LIST BUFFER.

When the DOS has found the particular entry in the directory that is being searched for, the track and sector list is stored in this part of the file buffer. During a file creation the track and sector list is built here.

## 3. FILE CONTROL BUFFER.

The miscellaneous information buffer is all those odd items of data that will be useful to DOS while it is reading or writing to the disk on behalf of each file. For instance which drive and slot number and any other such parameters. The misc. info. buffer is normally located near the top of the DOS between B5D1 and B5FD. Figure 3 below lists the individual items that are stored in this buffer with the number of bytes available in each.

ITEM	LABEL	SIZE	CONTENTS	DESCRIPTION
1	FDT	1	12	FIRST TRACK/SECTOR LIST BLOCK (TRK)
2	FDS	1	0C	FIRST TRACK/SECTOR LIST BLOCK (SEC)
3	CDT	1	12	CURRENT TRACK/SECTOR LIST BLOCK (TRK)
4	CDS	1	0C	CURRENT TRACK/SECTOR LIST BLOCK (SEC)
5	WRF	1	00	WRITE REQUEST FLAG
6	TRK	1	12	CURRENT TRACK BEING PROCESSED
7	SEC	1	0B	CURRENT SECTOR BEING PROCESSED
8	VDR	1	01	BLOCK NUMBER IN CATALOG BEING PROCESSED
9	VDI	1	00	INDEX TO FILE ENTRY WITHIN THAT BLOCK
10	DMS	2	7A 00	MAXIMUM NUMBER OF TRK/SEC PAIRS ALLOWED
11	DFS	2	00 00	CURRENT T/S BLOCK BASE VALUE
12	DNF	2	7A 00	REL SECTOR OF NXT DIR
13	CMS	2	00 00	SECTOR CURRENTLY IN MEMORY
14	SDL	2	00 01	SECTOR DATA LENGTH
15	CRS	2	00 00	CURRENT RELATIVE SECTOR
16	CSB	2	A1 00	CURRENT SECTOR BYTE
17	RCL	2	00 01	RECORD LENGTH
18	CRR	2	A1 00	CURRENT RELATIVE RELE
19	CRB	2	00 00	CURRENT RELATIVE BYTE
20	NSA	2	02 00	NUMBER OF SECTIONS ALLOCATED
21	ALS	1	00	ALLOCATION SECTOR BYTE
22	ATK	1	00	ALLOCATION TRACK
23	ABM	4	00 00 00 00	ALLOCATION BIT MAP
24	FTC	1	81	FILE TYPE CODE
25	SLT	1	60	SLOT NUMBER * 16
26	DRV	1	01	DRIVE NUMBER
27	VOL	1	FF	VOLUME NUMBER
28	VTN	1	11	VTOC TRACK NUMBER
29	SPR	3	00 00 00	3 SPARE BYTES

Figure 3. File control buffer contents.

3.1. FDT. The FDT is short for First Directory Track. The value stored here is the track number at which the first and maybe only block of the track and sector list for the file is stored.

3.2. FDS. The FDS is an abbreviation of the First Directory Sector and corresponds to the FDT. The FDS is the sector on track FDT that the T/S list starts at.

3.3. CDT. If the track and sector list for the file exceeds one block in size then while an operation is being performed on it the track address of the block currently being processed is stored here.

3.4. CDS. This is similar to the FDS and corresponds to the CDT in the same way as the FDS is related to the FDT. The concept of the FDS, FDT, CDS and CDT is illustrated in Figure 4.

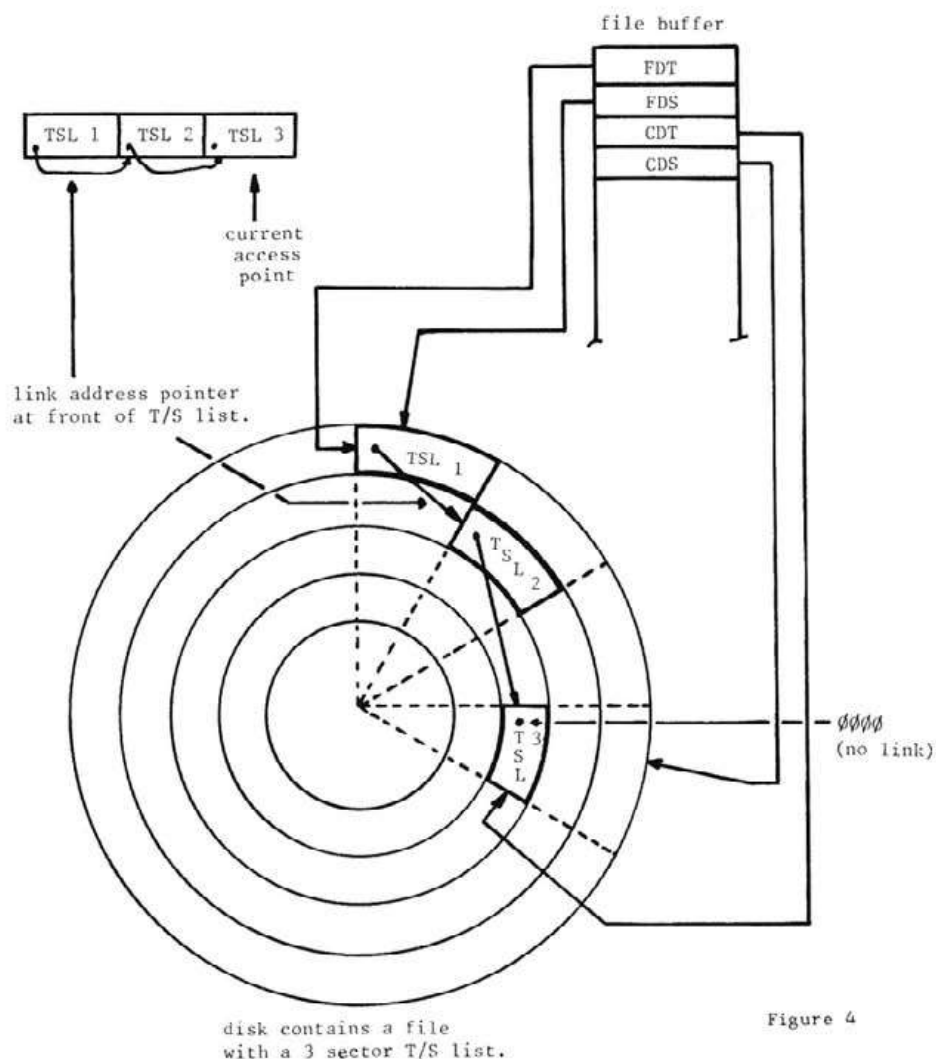


Figure 4

3.5. WRF. I haven't figured this out completely but the following values have been found.

```
00 No bits on and so no write performed.
01
02 Write catalog bit will permit a
   catalog entry to be created
04
08
10
20
40 Write current sector bit
80 Write file directory block
```

3.6. TRK. If a sector is being read or written then its track address is stored here.

3.7. Similarly its sector address is stored here

3.8. VDR. The directory track has one sector permanently allocated as a VTOC, all the others are catalog sectors. This stores the block number or page of the directory that this file buffer relates to

3.9. VDI. This is the index byte into the file entry area of that directory block. This will give a precise vector to the location of the filename within the catalog

3.10. DMS. This is the maximum number of track and sector pairs allowed in each track/sector list block. It is identical to the value stored in the disk VTOC

3.11. DFS. This is the base value that needs to be added to the sector currently in memory to get the relative sector within a file. It is the base address for the track sector block currently stored in this file buffer.

3.12. DNF. This is a similar value but has the maximum number of track sector pairs added to it to give the base offset for the next block of the track/sector list. There may not be another block but the offset is calculated anyway. It can be thought of as:-

$$DNT = DFS + DMS.$$

3.13. CMS. This is the relative sector number currently stored in the memory. I have not tested this to see whether it is relative to the current track and sector list only, or pertains to the entire file. It would in fact make no

difference for a file whose length is less than 122 sectors.

3.14. SDL. This is the value stored in the IOB specifying the length of each disk block or sector. For Apple DOS this is always \$100 i.e. 256 bytes. This may change to \$200 for Pascal but unless anyone has got at Pascal's innards this is unconfirmed.

3.15. CRS. This is the current relative sector and is (I think), a close relative to the CMS but I am not sure.

3.16. CSB. This is the byte within the current sector that is being pointed at most probably for use by text file access routines.

3.17. RCL. The record length is specified by the optional L parameter which tells DOS the length of the records within the random access text files.

3.18. CRR. This is probably calculated from the CSB as follows:-

$$CRR = CSB * 256$$

-----  
RCL

and points at the current relative record within the file. This is normally specified by the R parameter in a READ statement.

3.19. CRB. The Current Relative Byte points at the byte with the record that is to be accessed via the current instruction and would have been specified by the B parameter in a READ instruction.

3.20. NSA. This is the total file length in sectors and is the value stored at the end of the file name. This is a true representation of the value since it runs to two bytes in value unlike the value stored with the file name which is indicated as (NSA) MOD 256.

3.21. ALS. This is the Allocation Sector Byte. It is the value found by inspecting the bit within the VTOC.

3.22. ATK. This is similar to the ALS and is the track address of the next free sector.

3.23. ABM. This is the four byte bit map that corresponds to the track currently being searched for a free sector. This bit mapping process is covered in detail in the DOS manual.



3.24. FTC. This is the File Type Code taken from the directory entry for the file. The most significant bit indicates whether or not the file is locked.

3.25. SLT. This is the Slot Number, Times 16 that the disk with this file is installed in.

3.26. DRV. And this is the Drive number in the SLT in which the disk is installed.

3.27. VOL. This is the Volume number of the diskette in Slot SLT and Drive DRV.

3.28. VTN. The VTN is the track number whose sector 0 is assumed to be the VTOC for the disk in SLT, DRV.

3.29. SPR. There are three spare bytes left for expansion of the file control buffer in future releases of the DOS. It is unlikely that they will be used but anything is possible, and it is always a good thing to allow a bit of room for expansion.

4. The next part of the file buffer is where the file name that the buffer is open for is stored. This uses the standard 30 character notation as used for filenames throughout DOS type 3.

5. Item 5 in the file buffer is a pointer that is used to locate the start of the file control buffer.

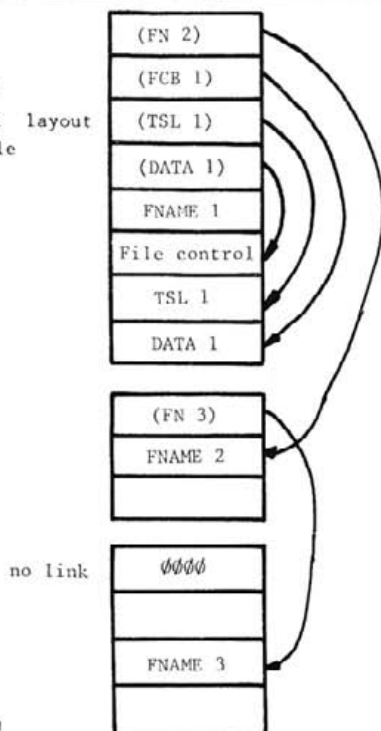
6. Item 6 similarly points at the start of the track and sector list buffer.

7. Item 7 points at the start of the Data Buffer.

8. The last pointer (item 8) is not used to point at anything within the Buffer itself but points at the start of the file name in the next buffer down. The concept of this linkage is illustrated in figure 5 for a 3 buffer case that exists at boot time.

As can be seen from figure 5 above, if there are no more buffers then the link pointer is set to 0000, this follows the same convention throughout DOS. In a way it is a pity this value is used to indicate no link as it precludes the use of track 0 for anything other than DOS storage for booting. If the value FFFF were used this would not be a problem. This would however make the checking for linkage in most cases a little more difficult.

Figure 5.  
Conceptual layout  
of the file  
buffers.



#### CONCLUSION

I seem to have rambled on at great length here about what started out as a fairly simple subject. It would be possible to map out the address of all the individual buffers for each type of machine but that really would be a waste of space in the journal. If you want to do it then go ahead. By patching the DOS on the disk it should be possible to eliminate the necessity to use the MAXFILES as a statement in a Boot program, since this garbages any program anyway. That way the appropriate number of file buffers can be set up automatically. By putting various other values into the file control block it should be possible to change the parameters relating to a file during the execution of a program. One might, for instance, be able to change drives without closing and re-opening a file. Whether or not any of these possibilities is in fact of any use I will leave up to the rest of you to decide. Perhaps it might make an excuse for another article. It could be that I am barking up the wrong tree completely and what I have found is not a file buffer but a box of kippers! That is also up to the rest of you to write in and tell everybody else where I have gone wrong.



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# Education

by Norah Arnold

A few months ago while attending a workshop at Nottingham, I met a gentleman by the name of Peter Cave. Peter uses his Apple in school and he and a few friends have formed a 'disk ring' in order to develop useful programs for primary school children.

Peter has recently sent to me a disk containing several programs which he and his friends have found to be useful in a school situation. This disk is to be added to the Software Library and will be available at the normal price for library disks. The disk contains the following programs:-

1. **TILES** Pattern making with simple use of co-ordinates. The resulting patterns may be saved.
2. **ABACUS** This program is not intended for use by the children, but as a visual aid to help the children to understand place value. It is very helpful in getting over a concept which is difficult to demonstrate in traditional ways.
3. **MONEY ABACUS** Similar to Abacus but is a visual demonstration of the conversion of pounds to pence and vice versa.
4. **MOUSE CHASE 2** Peter describes this as a popular game which many children find difficult. Mouse Chase 2 is a hires version, while Mouse Chase 1 which is also on the disk, is the original lores version.
5. **ROBOT MAZE** This contains four mazes. Needs some logical thinking and map-work in order to get out.
6. **SIEGE** This simulation is not intended to be historically accurate but to exercise co-operative management skills.
7. **HAMMURABI THE GREAT** A modified and corrected version of the Integer simulation. Peter has tried to make it easier to use and more pleasant to look at.

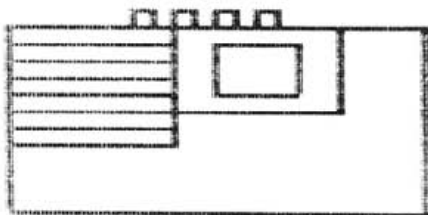
8. **SHAPEDRAW** An easy way to create shape tables. See Hardcore, Feb. 1982.

To get this disk from the Software Library ask for Education Disk Letterbox 1.

If any teachers or parents who are at present trying to get together programs for young children would like to become members of a wider disk ring, write to me through the P.O.Box. The disk could be sent from one person to the next on the list and each could add programs that they have found useful. The programs need not be perfect - after all, very few ever are. Mutual help and co-operation is the theme. Many thanks. Peter, for offering to start the ring rolling.

## LOGO ARTISTS

All I did was leave my cassette recorder on my desk during a wet dinner-hour when the children were confined to the classroom. Kerry and Nicola, both aged eight years six months, could not resist the challenge. They presented me with a Logo program which produced the following excellent likeness of my cassette recorder.



MAN AND DOG

Logo drawing by -  
Kerry & Jane,  
aged 8.5 years

# Why Does Less Cost More?

by Neville Ian Ash

Now we have the Apple IIe, but don't worry, your II plus or europlus isn't dead, just on the way out. The vast majority of the existing programs work with the new machine and most of the new software will work with the old hardware. So after Apple has had a model in production for such a long time, why does the new model cost more?

For a start there are far less chips inside - so you pay more for less. The external casing is slightly different, but not much. Now more reliability and less inside costs more, even though there's not a lot of change for the user.

The keyboard is better, but reset could have been moved to the back of the machine. A display that could have been 80 columns is in fact still the 40 plus 80 with a special card. Though the 80 column card for the IIe is around half the price of the card for the europlus, could it have been included as a bonus feature?

Another feature for ease of use especially for business would have been the numeric keypad standard on many other models. It isn't essential, true, but it certainly makes things easier when you are putting in lots and lots of figures. After all these complaints - how does the new model measure up? In one thorny area Apple gets full marks from me - documentation. Rather than hundreds and hundreds of pages - great for those boffin types but not much good for me - they have a disk system. It's far better to use hands-on experience with a minimum of complicated books to teach you things you can easily manage without. And a bouquet to Apple for the keyboard - makes my europlus seem positively obsolete. Maybe that was the idea.

Altogether a better machine for people who are used to using typewriters like me, but not all that one expected after the spate of rumours. Comparing the new Apple IIe with those other micros with similar specifications one fact emerges.

You can get a similar specification for less money. So why do I still say that the Apple IIe, the Volkswagen of the micro industry will still be another success, even though it uses the 6502 chip? Because of the tremendous software base and almost unlimited range of peripherals and possible applications only limited by a company's ingenuity.

Even so, with their fantastic production lines all over the world, there had to be the opportunity of slaying the competition with a price around £599. Unless Apple felt people would still feel it was worthwhile to buy The Real Thing. And I reckon they are quite right.

In fact only today I saw an advertisement for yet another ingenious card to go in the back of your Apple II, II plus europlus or IIe called the Accelerator II, which makes the Apple faster than the much vaunted IBM PC, the ACT Sirius and Olivetti M20. And that's using PCW benchmarks. So for £295 you can be up to date even though your Apple isn't the new IIe and uses an 8-bit chip.

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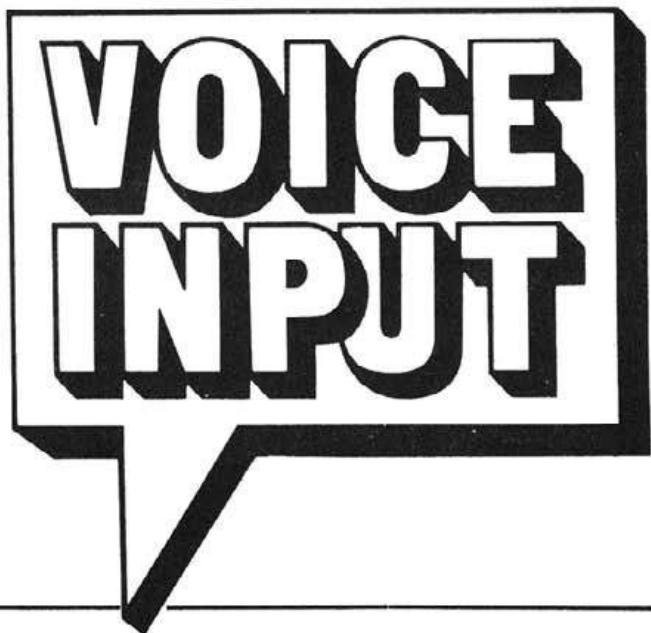
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# Voice Based Learning System by Scott

by Tony Williams

Never a man to let a good chance slip by, after writing the Seedlings column in the last edition of **Hard Core**, your roving editor took himself off to St Yves. No, not in Cornwall, the one in Cambridge, although you wouldn't know the difference - it shares the same fishing boats, well cabin cruisers, tourists, olde worlde souvenir shops and picturesque water. More important, one of its seventeenth century houses is the home of Voice Input, a pioneering outfit determined to break the keyboard domination of terminal and micro inputting once and for all.

Voice Input was formed in late 1981 by Donald Hofford who was convinced of the obvious advantages of voice entry for controlling computers. Acceptance was by no means instantaneous, not least because the technology was not quite ready then. As founder BASUG members will recall when Frank Kay demonstrated various digitised and synthesized voice input and output systems for the Apple back in 1981, it was agreed that actual voice recognition

was in its infancy, and that if you trained a system to run your bath when you said "Computer, bath!" but forgot to allow for incipient laryngitis, you had to go dirty.

However, one year on the technology has caught up - voice recognition is a going concern.

Personally, I have not found the keyboard a barrier, and as a hack from way back can make my thoughts known through my fingertips. However, that does not go for everyone. The introduction of Lisa shows that Apple Inc for one believes that the way to talk to the screen is not through the keyboard but through running a little furry animal back and forth on your desk.

Voice Input - after a shaky start with other less refined systems - have started (March 1, 1983) importing Scott Instruments Shadow/Vet technology and from the evidence of my visit, are so inundated with interested parties that you are unlikely to see them at many exhibitions. I do hear tell that they will be at Apple '83, however.

The hardware consists of the three part VET/2 speech recogniser: circuit board, audio preprocessor and microphone. The doublesided circuit board plugs into one of the expansion slots and a cable connects this to an outboard audio pre-processor housed in a small box.

The preprocessor analyzes an acoustic signal within a 300Hz to 4000Hz frequency range. Analysis consists of breaking the frequency range into two regions (300 to 1000Hz and 1000 - 4000Hz), taking zero crossing measures in both regions, and extracting the amplitude envelopes of the two regions. The four resulting analog data lines are converted into digital form at the request of the host computer (the system is also configured for the IBM PC). The software package provides all the functions for training and recognition. Vocabulary 'words' may be up to 1.5 seconds in duration and up to 20 characters long. The template area for a forty word resident vocabulary requires about 4600 bytes. The control software requires approximately 6k for a total of 10.6k required in the host computer. The system includes functions for saving vocabulary sets to disk, calling vocabulary sets from disk, and selecting sub-vocabularies. These functions can be used interactively in the VET-2 system (Voice Entry Terminal) or can be accessed from BASIC (Integer or Applesoft) or machine language programs. The system has a KEYVET feature which means that voice and keyboard input can be used interchangeably.



In their demonstration set up you speak to the Apple and, look no hands, a sign saying "Voice Input" lights up. What good is that you might ask, when you can more easily flip a light switch. True, but not if you have no hands, if they are busy doing something else or you are a thalidomide person getting around at half the height of other people. Or if the switch, or whatever is a very long way off and has to be activated by a radio mike. Or if you are a theatre stage manager who has to control an awful lot of lighting gear, curtain machinery and perform many activities simultaneously in double quick time.

The value of voice input can be best judged by taking the case of quality control. In an industrial or research environment the results of tests or measurements are in the normal way entered in the computer either directly via a keyboard or indirectly from entries made on paper which are later typed up. To enter data the tester must therefore put down the object under test or the test instrument or both and in the case of large objects may even have to leave the test bed altogether to record the test data.

Having to continually switch his attention in this way from quality control to data input is tiring for the tester and leads among other things to a greater number of input errors. Using the unobtrusive lightweight microphone which is positioned about half an inch from his lips (to overcome background noise interference) the operator really has 'hands-free' control. At the moment voice entry has proved a success in warehouse management, laboratory data acquisition, transport control and photogrammetry.

In the version I saw working, Scott Instruments's new (and relatively inexpensive) technology allows you to train the system to recognise your voice in as many as nine passes in each of which your voice may be slightly different. In user mode the system tries to match up your voice with one of the nine it has been trained for and if it finds a good match will take the appropriate action.

Personally I am much more in tune with the VBLS - the Voice Based Learning System. This uses the same voice recognition technology, but for a

different purpose. The system is not used to activate devices, but is a courseware authoring system including methods for creating lessons, guiding students, administering prepared quizzes, providing reinforcing activities and storing student scores - all designed for voice input operation. Even without the sound element this is a very carefully conceived and implemented CAL package. After planning their lessons out on paper teachers then enter them into the computer. Answers may be true/false, multiple choice, or the actual word or short phrase which is the correct response. Lessons may be easily edited or updated and branching capability is provided. Any answer may be considered a decision point on which branching may take place.

It would be tedious to describe in full detail here the actual learning route chosen by the planners. Instead I shall mention the examples which most impressed me. If the application is for foreign language learning - for drilling the pronunciation of individual words or two-words phrases not separated by a pause - the teacher can specify the degree of tolerance on a scale. If he sets it very wide, if the required answer is say "Middlesbrough" and the student answers "Loughborough" the computer may accept it and move on (in the final score, however, awarding the curiously misnamed 'bonus' point signifying a pretty rough rendition). At the other end of the scale the teacher can insist on an exact pronunciation and intonation. Incidentally, when "signing on" the student says a word or two to enable the computer to take a reading of his or her voice and thereby make allowances in attempting matches with the model answers. Matches are recorded not as right or wrong but represented on a sliding scale to indicate proximity to the desired model.

This has its limitations for foreign language learning purposes, of course. The overall accuracy of the student's spoken response is quantified and represented graphically, but the system is not capable of actually analysing what elements are wrong. For example, if the target word is the German "Muenchen" and the response is "munching" the VBLS will



calmly say 65% or some such, whereas the deserved reaction is a screamed "Have you got cloth ears! This is a city not breakfast time! There is no g on the end and the U has an umlaut. Say it again or else you're in detention!"

The computer fortunately doesn't say any of those things, and yet in a mispronunciation or mishearing situation the student really wants to know not how far he or she is out but what is actually wrong.

One lost opportunity: while "recording" his voice on the computer, the teacher does not have the built-in facility for recording it at the same time in clear on a separate but linked tape recorder. This omission means that the student is working "in the dark" as it were, following a model that may be remote in time.

As it stands he is attempting a good match out of his head, when it is better to hear it. I should add that the system does not set out to replicate and improve on language laboratory procedures, but still it is difficult to avoid making the comparison. Certainly language teachers or users ought to be able to add this facility with relative ease, and this simple addition would make the Scott system a far more powerful weapon in the language teaching armoury. Curious that where so much emphasis is placed on the spoken word so little is placed on the heard word. The regular Voice Entry Terminal system does make use of the Votrax synthesized voice chip for spoken prompts but this is not utilised by VBLS since this sound is inevitably rejected by serious language teachers.

However, I am looking at this from a narrow language teaching viewpoint, which of course is unfair. The VBLS can be used for any teaching application which involves a questioning technique and where a correct target answer is possible which demands a spoken in. Let's go one further - you don't need a pedagogical underpinning for using sound input at all. It can be used merely because it is fun and attractive in its own right.

The price at over £1000 might seem high until one considers it in the context of other capital expenditure. Seen against the twenty or fifty thousands a modest language laboratory installation may cost

- with all its concomitant breakdown and maintenance problems - a thousand or so pounds buckled on to an Apple is not so expensive. And I believe that every language lab in the country could gain a new lease of life from this and other computer assisted additions. Many students react unfavourably to the isolation of the language lab booth and unless constantly monitored by the directing teacher, can easily tire of the effort of self-correction. Some of these on other hand respond favorably to the stimulus of CAL and certainly VBLS which could be seen as a patient and untiring aid, offering immediate response to every student attempt.

Neither VBLS nor VET of course can cope with continuous speech. The system will handle one or two word inputs (without a pause between) - but anything more sophisticated will have to wait until the 1990's...unless, of course, the Japanese come up with anything - which they will. The problems of keyboard entry for the Japanese, with the unwieldy mixture of Hiragana, Katakana, Kanji and Roman letters used in Japanese are so insuperable that it could in the long run prove easier to bypass it and go straight for continuous voice input. Although Europeans are not faced with the same scel of problem we could benefit from a spin-off. That could even mean voice-entered word processing... and goodbye to your little furry desktop animals. And if the forecast is for the 1990's experience tells us that it will come sooner, and Voice Input is gearing up for it.

The sales and marketing director Rawdon Gallaway is rather philosophical about the state of acceptance of this technology, "We are currently passing through an educational phase, whereas we need to prove that Voice Technology has really arrived." The MD Donald Hoffer reminded me that the Maestro already speaks, that London Transport is going ahead with its "Talking Bus Stops" project ("London Transport regrets....") and that British Aerospace intends incorporating voice control into the cockpits of fighter planes. There is a less exotic but equally useful application in aids for the handicapped (our friend Roger Jefcoates has been along to St Yves already, of course) and

Voice Input is working closely with the Manpower Services Commission developing systems to help both the blind and physically handicapped to perform as well as the sighted and able bodied. Pretty exciting place, St Yves, and who knows, if I keep writing long enough they might want to lend BASUG a system to work over...

## Lonely Apples

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## Epson Pages

### Epson Command Codes and Applewriter II.

by  
Jim Panks.

The commands used in Applewriter II to turn the Epson Printer into a useful tool can be hard to understand. I have after some days of constant attention to this problem made headway. I have found the only way to use these commands with any success is to use the **Glossary Function** present within Applewriter II.

First of all you will have to set up a **Glossary File**. This is done by writing a normal Applewriter file. You start by making a list of the functions you wish to use and then give them a key to turn them on or off. The **Glossary Function** allows you to use any of the keys on the Apple and it will also recognise upper and lower keys. This gives you at least 82 variations.

The following list is designed with the whole Epson **MX** range in mind, although it has been tested using the **FT/3** version, so if you have an earlier version you will not get some of the more fancy printing.

If you have the Apple II Users guide you will find page 360 a help as it lists many of the control codes required. For those that do not wish to play with the Epson codes I have placed a disk in the software library and it should be available shortly.

The Epson needs to have certain codes entered in the correct order to use all the features present. Some of the FT/3 codes require a Chr\$(0) or (1) after the normal alphanumeric code. Inputting them into Applewriter can be difficult because Chr\$(0) is Control @, which is used to let you know when you are in the edit mode. I have found that you can enter it provided you press **Control K** just prior to entering control codes. This lets you enter **Control @** by pressing the Control Key, Shift Key and P key all at once.

# AGM

The Annual General Meeting, of  
BASUG will take place on :-  
2nd July 1983

at  
The Central Institute  
of Adult Education,  
Longford St.,  
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at 2.00 P.M.

There will be a workshop from  
9 to 5, the main topic being  
**PRINTERS**

There will be demonstrations  
of some of the latest printers  
including :-

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+ Accelerator  
+ much more

There will be a draw amongst  
those present to attend an  
Open Day at

Apple Computer  
Hemel Hempstead  
in September

The Central Institute is 5  
minutes walk from Euston  
Station, and 10 minutes walk  
from Tottenham Court Road.  
Free parking is available in  
the Institute Car park. Please  
come and bring your printer  
and printer problems.

I will explain each feature as I go along, the first feature is condensed which makes adding notes to articles or putting large tables within articles. When using this feature you must remember that it allows 132 columns and you must therefore account for this when justifying your text. This applies to all the different sized type.

The Control Code for Condensed is :- Control K, Control V, Control O, Control V, and Control K. The Control K is to keep the cursor in upper case mode. The Control V lets Applewriter know that you are about to send a non-printing control code. The actual code for condensed is Control O. Well that is a taste of what is to come.

On the FT/3 the continuous underline was introduced, this together with the superscript/subscript requires a Chr\$(0) and Chr\$(1) to turn on or off or in the case of super/subscript to tell it which you wish to use. As an example of how to enter these codes I have used the underline as an example and the codes are as follows:-

Control K, Control V, Escape -, Control Shift P, Control V, Control K.

Now you can see why the **Glossary Command** is needed, fancy putting that lot in every time you wish to underline.

I will now demonstrate the things that can be done using the FT/3.

## Big Letters

Condensed Characters

Emphasized Characters

Superscript Mode

Subscript Mode

Underline Mode

Double Strike Mode

And to finish, for those that do not like wasting paper how about this:-

Subscript and a line feed of only 7/72nd" of an inch make this the ideal way to send Air Mail Letters ?!?!?

In the next issue I will continue with some other variations on this theme and if any member wishes to add his comments or has a particular problem with his Epson and Applewriter please let me know.

# hardcore

Contributions to Hardcore are always welcomed, without them it would not exist. Whether you have a learned article, a 'quick tip', a problem or a solution, let us know.

If you have more than a short letter, it is helpful if you could send it on a disk, with a hard copy if possible. If you want to send printed copy, please do not cut it up but fill justify on a 9 cm (3.5 ins) column. We prefer copy on disk, either as a text file, or an Applewriter I file. Pascal text files and others such as Wordstar files can probably be accommodated.

Remember, contributors receive credits on the Software Library.

# hardcore

**EPSON PRINTER CODES WITH APPLEWRITER ]]**

David A Archbold, Squadron Leader,  
Ramstein Air Base

I have been slightly confused by some of the comments and questions about Applewriter ]] in the December and February issues of **Hardcore**. I have an Apple ]] Plus, Tymac Centronics interface, and an Epson MX-80 Type III. Neither I nor friends in the local club, who own various other combinations of equipment, have experienced any difficulties with Applewriter ]]. I hope the following will therefore be of assistance.

/Ed. If I may butt in. The problem concerned the Centronics 737 alone. But let it pass, tell us all: /

As far as the software is concerned, the upper limit on the Right Margin (rm) command in the Print Parameters would appear to be 99,999 although the setting becomes inaccurate above 30,000! Seriously my standard setting is 75 with the Left Margin at 5. However, I regularly use 130 with condensed printing. Even with a setting of 200 the printer continues quite happily, generating its own Line Feed (LF) when its buffer is full, with a further LF being received from Applewriter after every 200 characters. Although there is no practical use for the latter test, it does show that the 40 characters per line limitation discussed in December's Seedlings is not a software problem. Don't forget that you can amend the Print Parameters available on initial booting by changing them to what you want and saving them to disk with Ctrl Q-4 under the filename SYS.

Turning to the insertion of Ctrl characters for printer control, they may, of course, be entered directly in the Top Line parameter (i.e. tl/Ctrl-O/ gives condensed printing). Within the text, Ctrl characters must be surrounded by Ctrl-V's. The first Ctrl-V is not placed in memory but switches on a routine which stores all subsequent characters in memory exactly as they are input, but deducts 64 from the ASCII code of (almost) all characters whose codes lie between 128 and 159 before printing them to the screen. Character codes outside these limits are unaffected. Study of

Table 7 on page 15 of the Apple ]] Reference Manual will show that character codes 128 to 159 are all the Control characters, whereas codes 64 to 95 are flashing characters. Thus following a Ctrl-V, the true Ctrl codes are inserted in the textfile in memory while "harmless" flashing characters are printed to the screen. The exceptions to the above are Ctrl-M (RETURN) which of necessity remains active, and Ctrl-D which for some reason that I have yet to fathom is printed as an inverse D - CHR\$(04) - rather than a flashing D - CHR\$(68). No doubt it has something to do with its relationship with DOS commands. Needless to say, the second Ctrl-V cancels the above procedure.

Having established what Ctrl-V does, how do we put it into practice? Let's look at some examples:

#### a. Condensed Characters

The MX-80 Type III Operation Manual states on page 60 that to print condensed characters the Epson must receive the Shift In (SI) code and implies that this is 0F Hex or 15 decimal. In fact it can be seen from the Table at Appendix 3 of the same book that the codes between 128 and 255 have identical meanings to those between 0 and 127 as far as the Epson is concerned (ie bit 7 is ignored). We can therefore type Ctrl-V Ctrl-O Ctrl-V and CHR\$(143) or 8F Hex is entered into memory while CHR\$(79) or 4F Hex (flashing O) is sent to the screen. When the CHR\$(143) is received by the Epson, condensed printing is initiated.

#### b. Emphasized Characters

We need to output ESC E to the printer. ESC E is CHR\$(27) CHR\$(69) or, using the above arguments, CHR\$(155) CHR\$(197). We therefore type Ctrl-V ESC E Ctrl-V and the correct codes are loaded into memory whilst a flashing-[ and normal E (remember 64 is NOT deducted from codes greater than 159) are shown on the screen. Note that it must be "E" and not "e" that you type, as the code for "e" is CHR\$(229). How you produce "E" will vary depending upon whether or not you have carried out the "shift-key modification" and have toggled it with Ctrl-Q 7. With the modification, entry is straightforward: without it you will have to type ESC prior to each character entered eg Ctrl-V ESC-ESC ESC-e Ctrl-V.

## c. Underlining

On page 65 of their Manual, Epson say that underlining requires Esc- +(n)D where n = 0 or 1 to respectively stop or start underline mode. It seems simple enough, but unfortunately it is untrue. The "Esc-" bit is correct and can be dealt with as in para b above, but the 0 and 1 are not what they seem. What is required to switch off underlining is a CHR\$(0) which is the NUL code. Neither CHR\$(48) nor CHR\$(176) which are the codes produced by "0" will do. The answer is to type in Ctrl-@ ie Ctrl-shift-P in upper case mode. In the same way, you would expect to type Ctrl-A to generate CHR\$(1) or CHR\$(129) to switch on underlining. That is a correct solution but in fact the Epson will accept ANY character, other than NUL, to do the job, including a space. Even if you type "ESC-" without any third character, underlining will commence - but it will pinch the first character of your text to make up the proper code! In summary then, to start underlining type Ctrl-V ESC- (x) Ctrl-V and you will see on the screen flashing-[ normal (x), where (x) is any character other than NUL. To stop underlining, you type Ctrl-V ESC- Ctrl-shift-P Ctrl-V and will see flashing-[ normal- flashing-@.

## d. Superscripts and Subscripts

To answer the specific query raised by Barry Hill in the February Hardcore, superscripts are obtained with Ctrl-V ESC S (not "R" as he implied) Ctrl-shift-P Ctrl-V and subscripts with Ctrl-V ESC S (x) Ctrl-V where (x) is any character other than NUL. The reasoning is as given in para c. above. Other points to note are: DIP switches 1-3 and 1-4 in the Epson must be in the normal OFF position for superscripts and subscripts to be produced; to get reasonably proportioned superscripts you should first change to condensed mode, the control sequence becoming Ctrl-V Ctrl-O ESC S Ctrl-Shift-P Ctrl-V to obtain superscripts and Ctrl-V ESC T ESC H Ctrl-R Ctrl-V to switch them off; and finally you must switch off Emphasized Mode, if you are using it, before printing superscripts.

For those unbelievers who would like to check things for themselves and who have the ability to jump from Applewriter II into Monitor (by loading non Auto-start ROM routines into a language card, or using a specialist card like SNAPSHOT - which I can highly recommend), enter the codes which you wish to look at in the first line of Applewriter text. Break into Monitor and examine the text file which commences at 4700 hex.

One final point. Although Ctrl-V is not placed in the text file, all subsequent control codes are. These are then included in Applewriter's character count and justification of the printed text is upset. I can unfortunately offer no solution at the moment.

I hope this is of use to someone.

## EPSON PRINTER RIBBONS

The Miser (Jim Panks)

How many miles do you get from your Epson Ribbon ?

Here is a tip for when it starts to fade! Take the ribbon out, turn it over so that the winding knob is facing down. You can now open out a paper clip to use as a winding handle.

Turn the ribbon over so that as you wind the ribbon into the cassette it turns over. As soon as the turn has entered the cassette start winding with the paper clip. It takes about three minutes to wind the twenty or so yards through the cassette. When you have finished place the cassette in the machine and you have a brand new ribbon for nothing. The secret is that the ribbon is struck above the centre line, allowing the bottom to remain inked.

If you find this works (I do) you may send me a small donation.

# Visicalc Corner

by Fran Teo

## "THE Spreadsheet"

In the last edition of **Hardcore** I mentioned that we would be dealing with some of the built-in functions of Visicalc but since then I have come across a new spreadsheet which deserves a very prominent mention. Quite simply it is called 'THE Spreadsheet' and distributed by Call-A.P.P.L.E.

To all intents and purposes it is Visicalc but with further commands allowing greater flexibility. The extra commands are:-

/L	Sets local column width
/A	Sets attributes.
L	Accept only labels
V	Accept only values
P	Protect cells
H	Hide contents of a cell
D	Default
A	Accept all data

Other advantages are:- replicate blocks of data rather than single rows or columns, replicate formats or data rather than only being able to replicate the entire contents of a cell and extra cursor movement using the CTRL key.

You can also configure 'THE Spreadsheet' for 80 column cards and it automatically recognises any Ram cards you may have including the 128K cards. In other words no Pre-Boot disks are needed.

Visicalc files can be loaded directly into 'THE Spreadsheet' so transferring from one program to the other presents no problems.

When printing reports that are too wide for the printer, I usually have to work out how many of the columns will fit on the paper, print that out and then go back to the beginning and print the remaining columns. 'THE Spreadsheet' does all of that automatically! It will print out as much as it can fit on the paper, scroll up a few lines and then continue with the next section. What a time saver!

By now you can probably see why I have taken to 'THE Spreadsheet' in the way I have. I haven't had to learn a totally new way of operating a program, existing files can still be used and my extra memory and 80 column card are automatically recognised. On top of this I have all the extra features that I have been yearning for in the past. All this for a third of the cost of Visicalc. If possible buy it through Call-A.P.P.L.E. for \$60 - rumour has it that it is being sold in this country for £115 but even so it is still cheaper than Visicalc.

In my next article I shall return to using the built-in functions of Visicalc/'THE Spreadsheet'.

## Courses

Due to the phenomenal success of our first Visicalc course, we are running another. This will be at the Ladbroke Mercury Hotel, Bracknell, Berks on the 9th of July. The cost will be £17.50 for members, £25 for non-members. The cost has increased from last time, as we would prefer a maximum of 15 people on the course. Despite this increase, the value is tremendous.

We also plan to hold an Advanced Visicalc course after the summer.

Other courses at the planning stage include Machine Code, Advanced Assembler and another Pascal course.

There has been no response to the idea of a Pascal Assembler course, so that one has gone by the wayside.

If you want a course that has not been organised, or feel that you could give one, please get in touch.


# hardcore




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Nec 8023 (100 cps & prop. spacing) .....	339.00	389.85
TEC1500 25 (25 cps daisy wheel) .....	599.00	688.85
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HC 3.3

# Disconnected Jottings

by Q. Reidford.

This should, of course, be EPSON PAGES, but publication looms, the editor is raging and I've been otherwise occupied (or lazy). /Ed. no problem Quentin, Jim Panks has enough to say on the Epson to meet all our needs for a while/.

I had thought that there would be some feed-back on information but if there has been, then I'm afraid that it has been mislaid, and if there has been none then I feel that the whole essence of BASUG has started to collapse.

The group was started, as I remember, as a self-help group, and I, as a new and bewildered owner was very grateful for the help and encouragement given by everyone.....that still exists, although I suspect that I have met enough people to know their telephone number, which helps. I believe that the question of giving 'phone numbers has been mooted from time to time, and obviously dismissed, however I feel strongly that BASUG should be much more interactive, and in the hope that some others will follow, I wish my telephone number to be published as a contact point, I do not profess to be 'expert', far from it, but I am more than happy to have a chat about most things (except the weather).

My telephone number is 01773 611111 (01773) 611111.

I suppose this all leads on to John Sharp's article in the last issue about 'Micronet'.

What John omitted to say was that Micronet have been promising an Apple interface since January, and the latest information I have from their 'Help' line in Peterborough is: "Um! June .... well .. Mid-summer ..". The latest price by the way is around £61.00 plus VAT for the hardware/ software package, and a fairly modest quarterly membership fee.

The Micronet modem is an acoustic coupler; you dial up as normal and push the handset into the moulded box, but it

does seem well made, and very much a bargain. Rumour has it that an auto-dial, direct connect modem is on the way. This would allow you to leave your Apple switched on all the time and messages could be sent directly to you, and saved on your disk, with the device switching itself (and your disk/printer) on and off. But then the ordinary Apple modem is 'on the way' too !!

I have very recently had a play around in Micronet, on a friend's B--B. And I came away feeling very much as if I had been one of the first people to receive a radio broadcast on a 'cat's-whisker' set. The potential is undoubtedly enormous and -to return to this business of interaction within BASUG - Micronet must be the cheapest possible method of having an Electronic magazine and particularly a Bulletin Board for news and help. BASUG, again, hoped to be a 'pressure group' at one time, and I would suggest that this may be an ideal time to wield some muscle. After all, if everyone 'phoned Micronet (01-242 6552) and gave them a hard time on their Apple performance, then we might just have some effect....Perhaps Apple UK, who have quite a few pages on Micronet, would care to add their weight, or is that expecting too much.

I obviously feel that the area of telecommunications can only enhance our hobby and increase the degree of satisfaction and enjoyment we get from it. Colleagues in the States have used the Source and other similar central databases for some time, they have sophisticated automatic modems, and cheap if not free local calls; we on the other hand have British Telecom who I feel allow us technology as if they were dispensing gems from the Crown jewels.

Please help to support BASUG and the original aims of the group, if any members agree with me then please help to apply pressure. We will need help when all this technology comes pouring through the 'phone lines so again please write to Bob Raikes and find out what has to be done, and how.

If, however, you disagree then telephone your abuse to me then at least I will know that there is someone out there.....Abuse line is open from 8 till 10 most nights.

(On the Micronet delay, John Sharp assures readers that indeed something is happening on the Apple front, and that unless something quite drastic occurs the Apple will be hooked up certainly by Apple '83. Apparently the original firm contracted to make the board folded, leaving Micronet rather in the lurch.)

## Meetings & Workshops

### Graphics Workshop

This workshop took place at the Central Institute in London. A number of new items were on view.

Keith Chamberlain gave a demonstration of the Bit-Stik. Once again this proved a popular item which was enhanced by a further demo by Dick Menhinick of the Bit-Stik with the Strobe plotter. This showed more of the full potential of the system as a serious design tool rather than just a Hi-Res drawing aid.

Colin Holgate & John Molloy meanwhile were showing their video of John's group 'Mainframe' (as heard on Radio 1!). This video was created using the Apple's graphics. Very impressive.

At lunchtime there was an exodus to Lion House to look at books and magazines. The rumour that up to date copies of Nibble were to be had was unfortunately only a rumour. Nevertheless, Call Apple and others were available.

Colin was also showing 'Ceemac', a new graphics language from the States. Some of you may have seen a program called 'Fire Organ'. This contains a number of dynamic graphic displays, one for each key on the Apple keyboard. Ceemac is the language used to create 'Fire Organ'. The aim of the language is to make it very quick and easy to create abstract moving pictures or 'scores', in particular patterns which may add to the enjoyment of music etc. Also shown was a Hi-res kaleidoscope which reacts to music input through the cassette port. Again, very impressive.

Mike Siggins gave a preview of his Graphics program (shortly to be available from BASUG), and demos were given of Apple World, Graforth and many of the other Graphics packages. All in all, a successful day was had.

### Exhibitions.

Since the last magazine, we have attended two exhibitions. The first of these was the 4th London Computer Fair, organised by the Association of London Computer Clubs. After last minute panics over the lack of a machine, we managed to borrow one from Apple. Many thanks to them.

After a very quiet Thursday and a slightly better Friday, the Saturday proved reasonably busy. A number of new members were signed up, and lapsed memberships renewed.

Thanks go to all those who helped on the stand especially Jim Panks, Richard Teed and F.E.

The Midland Computer Fair was somewhat disappointing. Very much a Sinclair/ Vic type of exhibition and we were quiet most of the time. Contact was made with many who were interested to hear of Mid-Apple's attempts to get a local group going. Thanks to Mel Golder of Mid-Apple and F.E., without whom our attendance at the show would not have been possible.

We receive complaints from time to time that too much attention is being given to the South East, and it was partly with this in mind that we went to this show. It was not really a financial success, and involved a fair amount of time to organise from a distance. Our request for help to allow us to go to the Manchester Show drew not a single offer of help. Unless we do get some help from those who are nearer to the non-London events, the likelihood of being able to go to them will decrease.

We will definitely be at :-

The Computer Fair - Earls Court, London.  
Personal Computer World Show - Barbican, London

What about offers for -

The Northern Computer Fair - Belle Vue, Manchester.

# Readers' Letters

Sunningdale

Dear Tony,

I recently found that HIGHER TEXT (by Synergistic software) has a slight quirk on the Apple IIe. The Timekit produced by Glamire Electronics uses Higher Text to set up its display and whilst it works fine when set, when I tried to reset the time using the programme provided by Glamire it wouldn't accept the inputted data.

I wrote to CALL A.P.P.L.E. and had a reply from a member called 'Dutch'.

He says there is a conflict or whatever at location \$1F. To fix it BLOAD Higher Text, enter the monitor and change the following locations to 1A.

\* C07:1A  
\* C68:1A  
\* EEE:1A  
\* EF5:1A  
\* F7A:1A  
\* FE6:1A

Then do a 3D0G and BSAVE HIGHER TEXT, A2045, L614

I then ran the clock software and selected 'clock set' and all worked perfectly. A word of caution to anyone who uses Higher Text extended. The mod shown above does not work for this 'improvement' and I have a reply from the authors of Higher Text Extended (C&H Video) who say that they are aware of a problem but can't afford the cost of modifying their enhancement to the basic Higher Text programme.

Yours sincerely,

Peter Trinder.

Handicapped Persons Research Unit  
Newcastle upon Tyne Polytechnic  
No 1 Coach Lane  
Coach Lane Campus  
Newcastle upon Tyne NE7 7TW

Dear Sir,

we are organising a major exhibition

'Microfair Electronic Aids for the Handicapped' funded by the Department of Industry. The exhibition is to start in Newcastle upon Tyne in September, 1983 and then visit five other centres around the country.

In the past we have found computer groups very helpful and a rich source of new ideas. I would be grateful if you could inform any of your members who may be interested in participating in our exhibition.

You may not be aware of some of the other projects being undertaken by the unit. If you would like information on these projects or further information on the MICROFAIR please contact Ed Wilson, Peter Curran or Dale Robertson at the above address.

We look forward to hearing from you.

Yours faithfully,

Ednie Wilson  
Exhibition Assistant

~~11111 Highway Road~~  
~~Bedfordshire, New York 12308~~

Dear Computer Users Group

If possible I would like to place the following notice in your user group newsletter.

CALC-Letter is a bi-monthly newsletter devoted to documenting the use (and abuse) of electronic spread sheet programs and accessories. While prognosticators and seers were raving about the revolution the computer would bring, the revolution went off ahead of schedule. The people discovered Visicalc (TM)! And Visi-calc begat Visi-Clones and Calc-Alikes. And piles of people who would never be caught dead programming a computer, started creating incredibly complex computer models. We at CALC-Letter recognize this phenomenon for what it is: the electronic spread sheet concept is a major leap forward in user friendly high level programming languages. We need the help of users who have started to realise some of this

power. CALC-Letter is soliciting - and is ready to pay for - articles, models, user notes, software and hardware reviews, etc. for publication in future issues. To submit outlines or ideas for articles or to request subscription information write to the above address, Attn J.H. Kitler. Thank you  
Sincerely

James H Kitler, Editor

(Ed. Well, this is rather like a free plug, but we included it because it might be of direct benefit to those of our members that like to spread the sheets).

Ulverston

Dear Sir,

In the April issue of Hard Core you gave a name a telephone number for ITT manuals (Reader's Letters, page 34). Wanting some service manuals for my ITT 2020 I phoned the number to be told that no one had heard of Arthur Grimwood and that they had nothing to do with supplying manuals. Is the number a misprint or an error in someone's filing system or what? (the person on the other end of the phone seemed quite upset by their number and extension being printed).

Having an ITT 2020 with Palsoft in ROM I have the following suggestions.

- 1) To use programs such as TASC or Super Forth (Hayden) load FP Basic from the Apple DOS 3.3 Master Disk into a Ramcard/
- 2) The ITT disk controller card can be upgraded to DOS 3.3: this can be done in two ways.
  - a) Modify the board (a couple of track cuts) to take 2716 EPROMS programmed with the contents of Apple's P5A and P6A PROMS.
  - b) Wire two adaptors (24 pin header - 20 pin sockets) to fit Apple's P5A and P6A PROMS on the board.

If a) is used then the EPROM in position P5 can be programmed with boot programs for DOS 3.2 and 3.3 (switch selected).

3) I have written a short (120 bytes) program to replace FINAL.OBJ - this is shorter, faster and a lot easier to use.

4) Jailbreak - hi-res mod for the ITT costs over £30 and can be built for under a pound!

5) I have a program which will convert an Apple hi-res picture to ITT format. If you would like details for any of these please contact me.

Yours faithfully

S.N.Hobson

/Ed. Glad to hear you are doing such useful work on the ITT. Readers: please don't call that number. In the early days of BASUG our members did a lot of research to find help for ITT users (since ITT were not being helpful) and that name was produced. Now it doesn't seem to work. I hope to find the time to look into it again. As for Jailbreak: you have missed the point. You seem to be saying that a pirated version of the modification can be built for a pound. That may or may not be so, but you ignore development costs and the right to profit./

Kingswinford

Dear Sirs,

Your correspondent Dave Miller of Finchley was enquiring in the February issue of Hard Core for information about genealogy filing systems. He will be pleased to hear that help is to hand. The Society of Genealogists has an S.I.G. for computer buffs and publishes a regular magazine. I have some knowledge of specialised programs - American (and literature) which may prove useful and would be pleased to pass this on. I use Visidex myself and to date it serves my purpose well.

Yours faithfully

William G Watson

/Ed. Dave: find William Watson's address in the Lonely Apples column/

Liverpool

Dear Sirs,

We are the owners of an Apple ///, and are interested in UCSD Pascal. Neither of these features very largely in the literature you have sent, and we guess that they would in any case be a minority interest among your members.

However, our hope in joining BASUG was that you may be able to put us in touch with others of similar interests. The lack of published information about Apple /// is beginning to make it a most frustrating machine to work on, and anyone with whom to exchange information, views or ideas would be most welcome.

In particular, is there anyone with any knowledge of system tables or vectors on this machine? (A memory map seems less relevant, as memory appears to be dynamically allocated). For example, the sort of thing we should like to be able to do is to access the graphics buffer directly and though we have a nice assembler in the UCSD system, without 'inside knowledge' it is impossible to use it to write an effective routine to dump graphics to our Epson printer - that was an early project, postponed for lack of knowledge.

Yours sincerely

I Flaxman

/Yes, you touch our consciences, we don't do enough for Apple /// users - but events seem to have dictated that neglect. Will try to correct it in future issues. In the final analysis, however, it is up to members to write and tell us all about their failures and successes./

Corbridge

Dear Sir,

Could you please offer some advice on what appears to be a compatibility problem.

My system is a 48k Apple II+ with disk, Integer firmware card (located in Slot 4,) with The Inspector in Rom D0 and the Programmer's Aid (in D8), 32k RAM card in Slot 0, a Wildcard, CPS Multifunction card running an Epson MX80 type II in serial mode and an Olivetti JP101 spark jet printer in parallel mode, ROM+ card,

Symtec light pen and an RGB colour card with a Decca 12" monitor.

My main problem concerns the use of Omega Software's Inspector EPROM which I have recently purchased. The adverts that I had seen for the ROM version indicated that the only system requirements were a 48k disk system and Integer BASIC. I thought that I had these as I was able to load Integer from the 3.3 Master Disk onto half of the Saturn 32k Ram card and that the chip could then be inserted into the ROM+ card. However, when the chip arrived from a dealer in the USA I found that it had to be plugged into the D0 socket on the motherboard of an Integer Apple II or on an Integer firmware card. I duly bought a secondhand card through the classified ads in Hardcore and installed the chip in the appropriate socket. I then installed the board in my only remaining slot and used the software supplied with the 32k Saturn card to modify DOS 3.3 to use the card in Slot 4. I now find that although I can access Integer Basic and run Integer programs I cannot use the Inspector chip. If I access the chip as described in the manual i.e. CALL -151,;C080; D800C nothing happens or the system crashes. After consulting "What's Where in the Apple" I tried using C0C0 to turn on the board located in slot 4. This meant that I could access the Inspector but the program would only act in a very intermittent manner. This I took to be an indication of some sort of conflict, most probably between the 32k Saturn card and the Inspector. Can you help? I have written to both manufacturers concerned. The chip itself is not at fault since I have tried it in another Apple with the same Integer Card and also in my own Apple with all of the other cards removed - a solution but not the one I want.

I have also had problems of compatibility using CRAE & PLE with the 32k Saturn RAM card in both relocated DOS and RAM disk modes. Have you any suggestions? It would appear that there are a number of conflicts between the changes needed in DOS to run such cards and a large number of programs, especially utilities.

I have included an SAE for your reply but could you also publish the letter in Hardcore as a warning to other members about



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non-compatible cards.

Yours faithfully,

David Steward

/Ed. It seems to me that your problem is that your Apple keeps crashing through the table and toppling onto the head of your dog beneath who, in a fearful panic attacks it and tears the plug out of the wall. You in your distraction plug it absent-mindedly back in. It is difficult to get the Inspector to work under these conditions. What you need is:

- 1) a cast-iron table or
- 2) a turtle instead of a dog or
- 3) advice from John Sharp.

But seriously, John Sharp writes: you should have ordered a RAM version of the Inspector. Then the Integer loaded onto your card would have contained the Inspector. since you have bought the Inspector in ROM you are somewhat stuck. You are correct in using COCO to access the card in the right slot. However, having done this, I would have thought you would have little problem, providing DOS knew that an INT command meant you were using slot 4.

It is worth noting that hidden away when you load INTEGER onto the language card are the Programmers' Aid routines (Is there someone who is willing to write an article for us, please, on the Programmer's Aid, JR?)

PLE (and therefore CRAE) need modification to use with DOS on the Language card (See Call A.P.P.L.E. article by Bongers. Now it is up to Hard Core readers to produce something more substantial in the way of results./

Tadworth

Dear Sir,

I have a number of problems and questions which I would like solved/answered. Concerning the Apple Silentyte printer, the Apple will not turn on with the printer connected but will turn on without the printer connected. Could you suggest a solution? How do you turn the printer on and off from a machine code program?

Concerning Hi Res Graphics, can you explain the relationship between the memory location and the screen position of pixels. Are the Eamon disks available? Thank you for an excellent magazine.

Yours faithfully,

G.H. Davies.

/Ed. As for the first problem - you should put it in the 1st port of the Silentyte. As for the rest, don't know. This we have to turn over to our readers/

Stoborough, Wareham, Dorset

Dear Sir,

I wonder whether other members have been disappointed with the screen resolution of the new IIe?

Using my new IIe with the same 18 Mhz green monitors (BMC, Kaga etc) as our existing II plus machines there is a very noticeable degradation of the image, compared to the II. In 80-column mode the poor quality of the display is such as to make word processing something of a pain. The sharpness of the display using the Monitor III is quite satisfactory, although of course the slow decay phosphor on this monitor can be a nuisance.

I would be most interested to know what the technical explanation of this is, if anyone knows. My dealer can offer none.

I would also like to know what Apple are doing about it, because it is a very serious defect to find on a not inexpensive machine. All the monitors, including the III are 18 Mhz, and the internal switch is not set to colour in the Apple, of course.

Yours sincerely,

Dr. Jeremy Lee-Potter.

/Ed. Our chairman tells me that there isn't generally a problem with this one, so your problem is likely to be specific. He suggests trying the single switch (somewhere in the middle of the board) which is in fact "a colour killer" and not what you think it is. Therefore it should be "on" (I think). Try it. If it doesn't work, get back to us with your phone numbner.



London NW2

Dear Sir,

I am interested in obtaining a used Apple II (with a printer), as my first step to learn micros. Initially I will use it as a word processor, prior to experimentation.

If any of your members wishes to sell his/her Apple II (in good working order) please put this person in touch with me. I thank you in anticipation.

Yours sincerely,

John Kason.

Bath

Dear Sir,

I would be interested in joining the Medical sub-interest group within BASUG, and would also like to be put in touch with anyone using Pascal on the Apple II plus or new Apple IIe.

Yours faithfully,

H.R. Lang.

The British Library,  
Copyright Receipt Office,  
2 Sheraton Street,  
London W1V 4BH.

#### SOFTWARE MANUALS AND THE BRITISH LIBRARY

The Science Reference Library, part of the British Library's Reference Division, maintains a collection of manuals designed to accompany software packages. The purpose of this collection is to enable potential software users to consult the manuals in the light of their own requirements and make a choice.

Some of the manuals of this type are available separately from the software firm, the price of the manual being set against the price of the package should the latter be purchased. Since this means that the manuals are "published" in the legal sense such works come under the terms of the Copyright Act 1911, which states that one copy of each work published in the United Kingdom shall be deposited with the British Library. We enclose a leaflet about legal deposit for your information.

Should a manual be eligible for deposit you should send one copy to us at the above address. Unless you enclose a note to the contrary it will be made available to readers in the Science Reference Library - as information for them and publicity for you.

If a manual is not eligible you may, if you wish, still send a copy to the above address with a note that it is not available separately but that you wish it to be added to the collection.

Yours faithfully,

Maureen O'Sullivan  
pp. For Head of Copyright Receipt Office

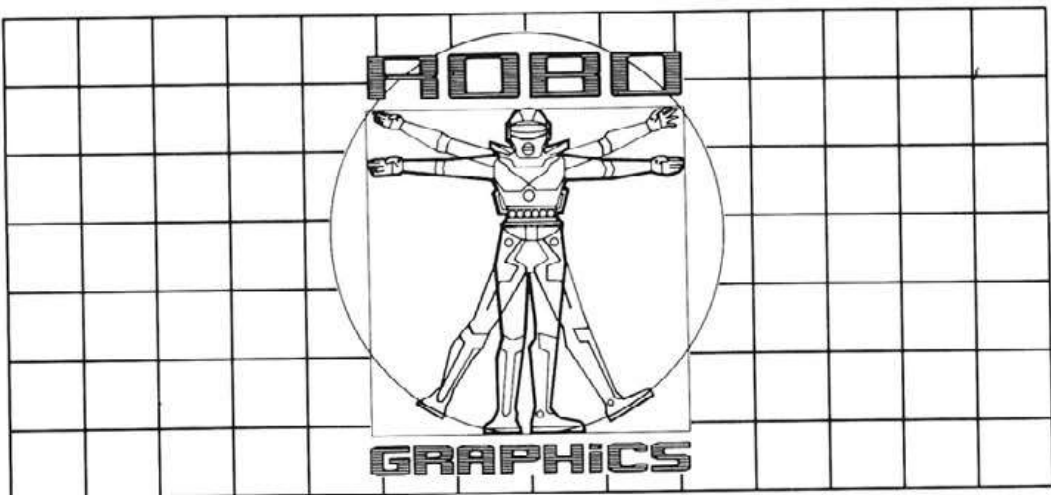
/Ed. So that's what became of Maureen O'Sullivan! But joking apart, we think the above notice is important for all you software producers./

## Membership

Well I have served nearly a full year now, and this may be my last Membership matters. I would like to thank all those people that I have met in my year and all those that have patiently awaited a reply when their membership has gone haywire. My machine can now run D.B. Master on its own and my wife has become a Computer/BASUG Widow, although she has learnt the basics of Applewriter II whilst I was in hospital. I would also like to thank the Committee Members that have had to listen to me until very late in the evening on our many meetings.

I hope that the person who takes over this post will benefit from the total reorganisation of the database and the associated paperwork. I hope to be back on the committee next year in a new job, and I hope I get the same support that you have given me this past year. So remember that BASUG runs only with your support and encouragement, without it we can do nothing.

SEE YOU ALL AT THE AGM IN JULY !!!



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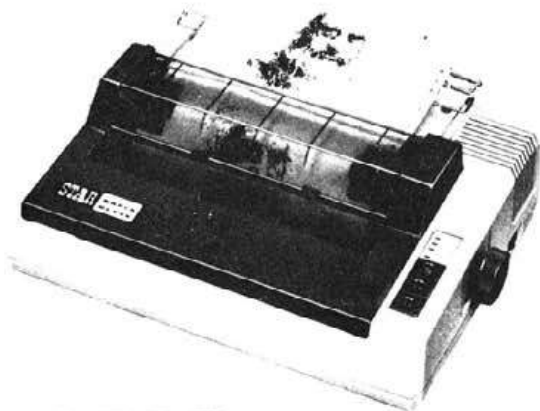
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# BASUG Goes Hemeling

At the end of March BASUG in the shape of Norah Arnold, John Sharp and Jim Panks took itself off to the bastion of Apple (UK) in Hemel Hempstead to talk about this, that, the fate of the universe but more particularly the immediate future for Apple. Instead of being given a perfunctory runaround they were treated to an exhaustive and lengthy talk on future developments by Cherry Waitret and Steve Holmes, marketing man.

Here are some of the jottings I made from their combined account. I hope I got it right.

First, Steve set the record straight on RevA and RevB. Apparently some purchasers of the IIe spotting a prominent B in its innards have concluded that he who says B must say A, so what about it. It transpires that about 1000 A motherboards were indeed made but recalled for one reason or another and converted into B's. Forget it.

Problems with 80 column card production. Apple have licked this one by buying up lock stock and barrel M & R who were making them.

The LQP Printer. LQP means Letter Quality Printer, and is something rather special in the way of daisywheels. It has 132 characters including foreign European character sets all on one printwheel. The configuration is identical to its DMP (Dot matrix printer) with the blindingly obvious advantage adopted by no one else that the same software and embedded printer commands can be used interchangeably. You do your text, check it on the fast DMP which will exactly reflect the final daisywheel printout. Why didn't I think of that?

German law, bless it, insists that a product be maintained by the manufacturer for at least ten years after production ceases. Which for us means that support for the II plus will last until 1993. However, there will be some changes. The DOS 3.3 Toolkit is to be dropped. There will be a massive swing in emphasis toward Pascal because its operating system is more conducive to transportability between the IIplus, IIe,

III and Lisa.

A new and improved graphics tablet is on its way.

People have been talking, incidentally, about Apple producing a disk to enable the Apple to emulate a BBC B, but that rumor has been flying around for over a year now so we should believe when we see it.

Good news for us, bad news for bad dealers. Apple is to crack down heavily on cowboy "Apple" dealers and any complaints sent to BASUG concerning shoddy or dishonest treatment of customers will now be referred to Apple itself who, depending on the case's merits, may decide to proceed.

## FAMILY MEMBERSHIP

The question of the attendance on courses etc. of the families of BASUG members has arisen on a number of occasions. In order to clarify the situation, we have instituted a Family membership. This costs £5.00 for the first additional member of the family, and by negotiation with the committee for further members.

Family membership gives all the benefits of individual membership, except that only one magazine is sent.

# Book Reviews

by Bob Raikes

Pascal  
for the Apple

Publ: Prentice Hall  
Author: Iain MacCullum  
Price: £15.95 incl software.

This book is intended as a self-teaching guide to Apple Pascal. It comes complete with a disk of programs which demonstrate some of the techniques at work.

I have little experience in Pascal, although I have done a fair amount of Basic and Assembler. I had worked through two previous books, not specifically on Apple Pascal, but had not really got much further than writing simple routines. The book claims to be suitable as an introduction to Pascal as a first programming language, although I am not sure how easy this would be. I will leave that to someone who has not programmed before to judge.

For me, the book succeeds completely. Having some time off work, I sat down at the Apple to work my way through the book.

The first part covers the use of the Pascal operating system, and the writing of simple programs using Turtlegraphics. The examples and exercises were accurate and it was very useful to have complete answers in the book. I did about 60% of the exercises, and found them very useful. Initially, I became irritated at the amount of editing, saving and compiling, but soon realised that I had learnt to use the editor and operating system without worry, a first! After this realisation, I accepted quite happily further suggestions.

The exercises gradually introduced various statements and, unusually, brought in the idea of recursion by using it before identifying the technique. I must say that I got the idea much more easily than I have in the past when, having been told that recursion was a difficult idea, I was looking for difficulties which did not exist.

The disk included with the book covers some of Part 1. It contains programs which step through as they perform, alternately switching between the graphics screen where the operation of the program could be seen, and the text screen where the instruction currently being executed was displayed. I had the advantage of a colour monitor which showed the graphics, and an 80 column card for the text, so could look from one to another. I would imagine that a complete beginner would find it of enormous benefit to be able to 'single-step' the example programs. A nice feature of the demonstration programs is that the current value of the variable used is displayed on the Graphics screen so that the way that the program works could be accurately followed.

Part 2 covers different data types and elementary input/output from the keyboard and to the screen. Completion of this section would allow the reader to use the computer for very many 'real-life' purposes. There are good descriptions of the various types of data including reals, integers, strings, boolean, and the especially useful type 'record'. Some help is also given with data validation and error trapping. The excellent standard of the book including the examples is continued through Part 2.

At this point I will confess that I have not yet worked my way through Part 3 which covers lists, queues, tree structures, networks and file handling. Very few of the books that I have read on Pascal cover File Handling at all. While the treatment given is far from exhaustive, it does show how files can be created, sorted, merged and updated. It will take me some time to complete Part 3 as this is brings in areas that I have not covered in previous programming. I am determined to finish the book. The reason that I have committed myself to paper already is that this is one of the most valuable books that I have used in computing, and justifies purchase for Parts 1 & 2 alone.

I have no hesitation in recommending the book to anybody interested in learning Pascal, or just interested in writing better programs.

# Unlist Trick

by Craig Crossmann

(reprinted from The Abacus II February 1980 and The Scarlet Letter, Vol 2 No 4 1983)

Here is another 'Apple Trick', a way of making your Applesoft program UNLISTABLE. It is really a clever method and quite easy to do.

First, write or load the program you wish to make unlistable. Next, place a REM statement on line 0. Then type in POKE 2049,1. Try to list your program and see what happens. Then try running it and the program should execute as normally. You just won't be able to list it.

It would be nice to be able to just SAVE it to disk, but unfortunately DOS corrects that byte to its proper format. However, there is a way to overcome that, too. After you have typed in the POKE statement, enter the monitor by typing CALL -151. Next, type AF.B0. You should see two sets of numbers; they represent one byte past the last byte of your program. Note these, remembering that the two numbers represent the low order byte first and the high order byte second. For example, if after typing the above you saw 90 08, the actual location is 0890 (in hexadecimal). Because Applesoft programs begin at \$800, this program is \$890-\$800 = \$90 bytes long. Then, for example, you would type:

BSAVE program name, A\$800,1\$90

You have now saved the Applesoft program as a binary file.

To run the program from Applesoft, simply BLOAD the binary program. It will be loaded as an Applesoft program. Do not BRUN it - it doesn't work. Just type RUN. If you try to list it before running it won't list, but it will still run. In most cases, the program will also self-destruct upon completion of execution.

# Applesoft

## Random Numbers

(reprinted by request from an ancient copy of Apnotes)

The Applesoft random number generator, like all such routines, is only a pseudo-random generator, so non-random patterns will eventually occur. The frequency of repetition of these patterns will vary from procedure to procedure. Proper re-seeding of the random generator during a program will help prevent the appearance of large repeating sequences. This can be done in two ways, and for best results, both should be used.

1. Seed the random number calculation at the beginning of the program, using the keyboard count location. This will take the form

```
S= PEEK(78)+PEEK(79)*256
X= RND(-S)
```

2. Within the random generating portion of the program insert a statement of the form Z= RND(-RND(9)), which will begin a new random sequence. (See page 102 of the old Applesoft Reference Manual).

Please be aware that no method will completely eliminate patterns in the random numbers generated, but we can break up the sequences so that objectionable non-random patterns are less likely to appear.

# Easy Text Screen Dump

## EASY TEXT SCREEN DUMP

by Ron Wrenholt

The following article was first printed in The Scarlet Letter and parts of the information it contains were taken from the Apple Tech Notes published by the International Apple Core/

Often times I have wanted to make a hardcopy printout of a menu or some other screen of text from one of my BASIC programs. With a Grappler or other fancy interface card this is simply a matter of using a built in command (usually CTRL-I S) after a PR#1.

But not everyone is fortunate enough to have an interface with a built-in screen dump option. Here is a BASIC procedure which will dump the current text screen to the printer. It uses the VTAB command to find the starting memory address of the first column of each line of the text screen. Then it prints the next 40 characters from that base address.

```
10000 PRINT CHR$(4);"PR#1"
10010 FOR VT = 1 TO 24:VTAB VT
10020 B = PEEK(40)+PEEK(41)*256
10030 FOR H=0 TO 39
10040 PRINT CHR$(PEEK(B+H));
10050 NEXT H
10060 PRINT
10070 NEXT VT
10080 PRINT CHR$(4);"PR#0"
10090 RETURN
```

Line 10000 accesses the printer if it is in slot 1. Line 10010 sets up a loop for the variable VT to go down from 1 to 24. Then the program VTABs to line VT. Line 10020 sets up the variable B as the base address of each line. This is determined by peeking at the value stored in memory locations 40 and 41. This value is the address of the cursor's present position.

In line 10030 we set up another loop for the variable H. This variable will go from 0 to 39. At 10040 we add H to the base address B so that we get all the 40 characters on line VT. Then we print the

CHR\$ of the PEEK of each successive character on present line. 10050 marks the end of the loop for H. 10060 is a PRINT which puts a carriage return between each line. 10070 marks the end of the loop for VT. 10080 brings the output back to the screen.

To use this utility, either type it into the program that you want to dump some screens from or make it an EXEC file and EXEC it into your program. Then, when you want to dump a text screen put in your GOSUB 10000.

## FIX FOR EASY SCREEN DUMP

by Harry E Brawley, Jr.

I read with great interest Ron's note. Having an immediate need for such a routine I tried it out at once. Alas, while I did get an acceptable screen printout the display scrolled four lines at the end of the process.

I added two lines to the program and this helped solve the screen roll problem.

```
60010 PRINT CHR$(9);"40N"
60090 VTAB23
```

The first line (60010) turns off the screen so that the RETURNS generated by the subroutine won't be sent to the display. The second (60090) places the cursor at the bottom of the screen to avoid a single line scroll.

The tradeoff is losing the bottom line, which in my application was acceptable. For those who find the price too great, I'd recommend the February 1983 issue of CALL A.P.P.L.E. Richard Emerson's super article on Apple interrupts includes an interrupt driven screen dump that doesn't disturb the display at all. The price here is a small hardware modification to gain access to the 650's IRQ pin.

/Ed. Thanks to Laurin Lewis for sending in the above reprints/.





# MICRONET

MICRONET STOP PRESS MICRONET STOP PRESS MICRONET STOP PRESS MICRONET STOP PRESS  
MICRONET STOP PRESS

Apple 83 is to see the launch of the Apple Micronet Adaptor at last! Now that this is available BASUG can put its Prestel house in order and set things moving. A number of members have offered help with editing copy. By now they should have received a separate notice informing them of the BASUG Prestel Editors' Conference to be held at Apple 83. This will take the form of a seminar teaching enthusiasts how to put information up. David Bolton is editor-in-chief for BASUG PRESTEL pages coordinating volunteers.

## Software Library

## Seedlings

### Bad Disk News

by Tony Williams

Irritated members who have ordered Disks 57, 51 and 23 from the Software Library, and have not received them should note:

These are corrupted masters and we cannot get good copies from them. Until further notice please do not order these disks. We repeat:

Disk 57  
Disk 51  
Disk 23

A-o No No's.

One of Hard Core's stalwart advertisers, Pynwon, yea, they of Vision 80 fame have withdrawn from the UK but not because of the kind of problems you might imagine. No, no, Mrs Pynwon tells me that Mr Pynwon, an Australian medicine man, has been recalled to his homeland by some strange bureaucratic decision. If you don't believe that Pynwon is their real name you are perfectly correct. If you need to know their name or indeed how to get hold of their products (not to speak of support for those of their products they have bought in the past) then you should turn to their heirs apparent Dave and Sheridan of Pace. They have taken on the Vision 80 and associated range. If you want to know their telephone number you have to turn to our centre page spread (Pace are also Hard Core advertisers from way back).

# Local Groups

Graham Ashdowne has started an Apple User group which meets on the last Tuesday of every month at

The Washington  
 Winchester  
 Avenue, Basingstoke

So get in touch and along down there!

## Southwest London Group

The newly elected secretary of the Southwest London group of BASUG is Michael J Skipp. He has written in to have the group's schedule for the year included in our Diary (Ed. Duly noted, Michael). He also writes that if anyone wishes to contact the group they should contact Michael Leeming on 01 674 1232. Hm, yes, I think I understand. Never mind, the meetings are held at Raynes Park ~~Westminster~~ ~~London~~, ~~West~~ ~~London~~, ~~South~~ ~~London~~, ~~South~~ ~~London~~.

## LAUGHS

Leicester Apple User Group (some of whom don't think much of BASUG but we are big-hearted about it) meet at 8 p.m. on the first Wednesday of the month at the "Airmen's Rest", Ratby Lane, Leicester. Activities include informed lectures, dealer demonstrations and educational discussions with experts. The fee is £5.00 a year. Future meetings will include a Pascal evening, Machine code, Modem, robotics and a forum. For further information contact:

~~Leicester~~ ~~Leicester~~  
 77 ~~Leicester~~ ~~Leicester~~  
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## Herts Group

The last Herts group meeting was a demonstration of the Complete Graphics System by Penguin Software. While this package has a number of useful features, it is clear that there is still no single package that has everything. It was good to see some of Norah Arnold's pictures. She has used Graphics routines to create a 'living fish tank' on the Apple screen. A demo of the Accelerator did rather spoil the effect, but will clearly be very much in demand by those who wish to write fast, complicated Graphics.

The group meets at :-  
 The Old School,  
 1, Branch Rd.,  
 Parkstreet Village,  
 St. Albans,  
 Herts.

on the first Tuesday of each month. The village is on the old A5, the Radlett Rd, South of St. Albans.

## Milton Keynes

Keith Chamberlain has offered to act as the 'post box' for those who would be interested in starting a Local Group in the Milton Keynes area. Will interested parties please get in touch with him on :-

~~Milton Keynes~~ ~~Milton Keynes~~

If you are involved in the running or setting up of a local Group, please don't forget to let us know what you are up to.

Thank you for a very interesting and invaluable magazine (Hard Core), says Hazel.



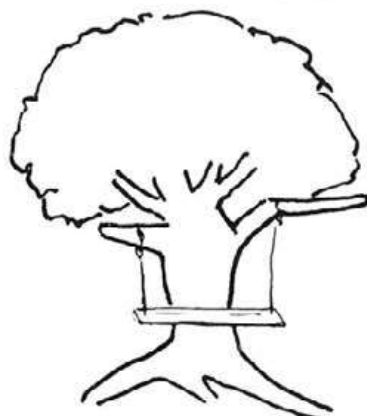
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SALES REPORT



AS THE ANALYST  
DESIGNED IT



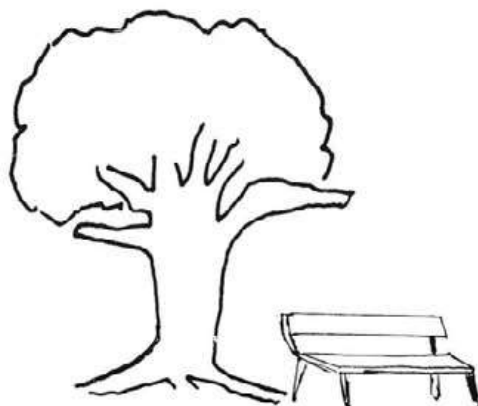
AS IT WAS PROGRAMMED



AS IT WAS INSTALLED



HOW THE ENGINEER MADE IT WORK



WHAT THE CUSTOMER WANTED

# The Ins & Outs Of The Apple II

In this article I hope to shed some light on the mysterious workings of the "Input/ Output Hooks" in the Apple II (& //e).

The way that the Apple does its Input and Output (ie PR# and IN#) is based on the ability of the 6502 chip, on which the Apple is based, to do an 'indirect jump'. What this means is that the flow of control within a program can be directed by a 'pointer'. For example: JMP (\$36)

means 'Go to the address contained in the addresses \$36 & \$37'. If the values in \$36 & \$37 were \$01 & \$08 respectively, the result of following the above instruction would be a jump to \$801.

The Apple uses this ability to point in any direction to control its input and output.

## OUTPUT

All output from the Apple in Basic ( via PRINT statements ) is sent to a routine in the Apple monitor called COUNT ( Character OUT ). This routine can be found in the monitor listing in the Apple II Reference Manual at address \$FDED. If you look at the routine, you will see that the first instruction is :-

JMP (CSWL)

This means that, with the character to be output in the accumulator, the program will jump to the address contained in CSWL (\$36,\$37). Normally CSWL contains the address \$FDF0, that is the instruction following and the routine called COUNT1. This routine deals with output to the screen.

When the instruction PR# is executed, Basic resets the address in CSWL to point to the beginning of the memory area reserved for the use of the card in that slot i.e. PR#1 will cause the address \$C100 to be put in CSWL. The next time that a Print statement is executed, the program will jump to COUNT and will then be directed to \$C100, where the code to operate the card in that slot (usually a printer) will deal with the character. In the immediate

mode, as soon as a PR# command is executed, the prompt character will be sent to the card.

From Assembler, or from Basic, the address for output can be set directly by poking into CSWL. If this is done in the immediate mode, both Pokes must be part of the same line, otherwise the address contained in CSWL when the prompt is output will be wrong.

## INPUT

Input to the Apple from the keyboard etc. operates in a very similar way. When Basic wants input from an INPUT statement, it calls RDKEY (\$FDOC), which includes the line :-

JMP (KSWL)

This jump normally points to KEYIN at \$FD1B. KSWL is at \$38,\$39. When an IN# is performed, the same address as for PR# is put in KSWL. This is why, in immediate mode, an IN#6 to boot DOS does exactly the same as a PR#6. In this case the jump to a subroutine at \$C600 does not output a character, but starts the boot process.

## DOS.

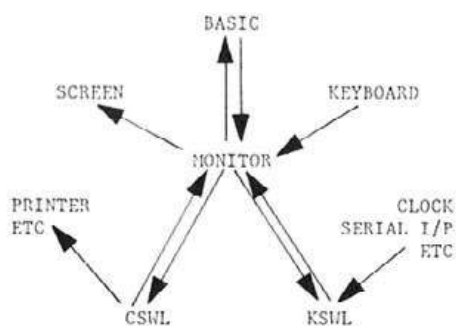
The disk operating system on the Apple II was not designed specifically for use on the Apple, but was an adaptation of a system designed for another machine. In order to link programs to the Operating System, the Input and Output hooks have been used.

A small diagram may be useful in seeing how this works.

DOS, when booted, connects itself between the Apple and the keyboard and screen. When anything is typed from the keyboard in immediate mode, it is first sent to DOS. DOS looks at the characters as they are put in, and when a carriage return is input, DOS compares the preceding characters with a table of commands, to see if a DOS command has been issued. If it finds a valid DOS command, eg CATALOG, it will execute it. If not, it will pass the input to the currently active Basic or the monitor. From a program, DOS will also look at

OUTPUT

INPUT



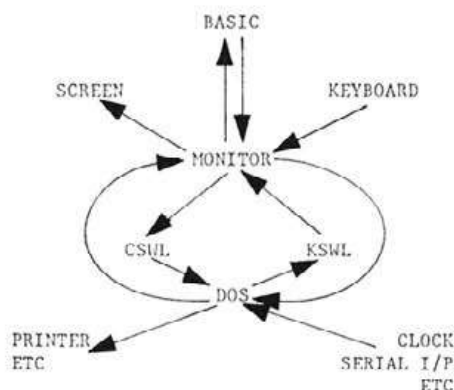
all output, and if the first character after a carriage return is a control D, it will again check to see if the output is a DOS command.

Of course, if the I/O hooks are changed by a PR# or IN#, without DOS knowing, DOS will not work. For this reason, whenever one of these two commands is issued, it should be preceded by control D. DOS will then reconnect its own output to the desired slot.

If you wish to send the output to somewhere other than a slot, for example to a routine in page 3, simply POKE the address for output into CSWL, and perform a CALL 1002 (JSR \$3EA). DOS will then look at CSWL and KSWL and reconnect itself accordingly.

OUTPUT

INPUT



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# DIARY

## June

- 3-5th Apple '83, Fulcrum Centre, Slough.
- 7th Herts group - Plotters
- 9th South West London group - Graphics
- 13th Croydon Apple User Group
- 14th East Kent group- Margate
- 16-19th IPC Microfair Earls Court

## July

- 2nd BASUG WORKSHOP AND AGM - Printers & Interfaces
- 5th Herts Group - 'Brains Trust'
- 9th Visicale Course, Ladbroke Mercury Hotel.
- 12th East Kent group, Margate
- 14th S. W. London group- Favourite programs

## August

- 2nd Herts Group- Games

## September

- 6th Herts Group- Databases
- 8th South West London Group- Word processing.
- 28th-2nd Oct Personal Computer World Exhibition

## October

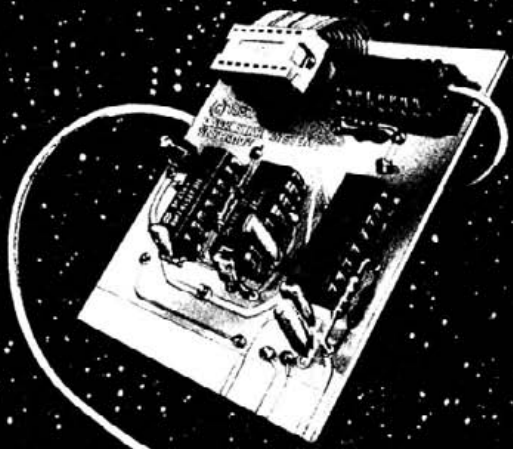
- 4th Herts group
- 13th S. W. London group Technical Software

## November

- 10th S. W. London group- Peeks, Pokes & Calls
- 24-26th North West Computer Show, Belle Vue, Manchester

## December

- 8th S. W. London group - Games



# SNAPSHOT

## The Disc Copy Card

# TWO

\*Apple II or II+ or Franklin, one drive and Language Card 16K required. Works with most popular cards, including Apple, Macintosh, Computer Shop, Merlot, Bantam, Digital, MPC, RH Electronics, Orange, Franklin, etc. Other brands, specify when ordering. Graphics dump requires graphics interface card and printer.

The disc copy card with all the great features of SNAPSHOT, plus:

**WIDER COMPATIBILITY:** Works with virtually any 16K card

**EASIER TO USE:** Just press the trigger on the attached extension cable. Never open your Apple's cover. Simple 1-2-3 copy procedure. Copies most programs in 30 seconds.

PEELINGS 11 magazine (Feb 1983) compares SNAPSHOT with Wild Card and Crack Shot:

"Overall, with one of the supported RAM cards, SNAPSHOT is the best buy."

"The copy procedure is perhaps the easiest and clearest of the three cards."

SNAPSHOT will copy any memory-resident program that runs on the 48K Apple. SNAPSHOT uses your 16K RAM card\* to interrupt a running program and dump the entire contents of 48K and registers to an unprotected backup disc. SNAPSHOT backs up programs that baffle nibble copiers like Locksmith without any complex parameter changes or trial and error hassle. And SNAPSHOT is still more effective, less expensive and easier to use than its imitators.

- ★ You have full, normal use of other hardware and software.
- ★ Ideal for debugging or analyzing programs.
- ★ Freeze-frame your game! Print the graphics on your printer and resume play.
- ★ Shooting down space invaders and the phone rings? Interrupt your game until later, or tomorrow. Save your high scores!
- ★ Repeatedly interrupt and resume running programs.
- ★ Faster and easier to use than nibble copiers or other copy cards.

- ★ Full monitor capabilities to examine, modify, trace, single-step or disassemble any interrupted program.
- ★ Suspend work with one program while you use another (for instance, interrupt word processing a letter to look up an address in a database, then resume the letter exactly where you left off.)
- ★ Move protected programs to hard disc or 8" disk: copy several programs onto the same disk.
- ★ List "unlistable" Basic programs; make custom modifications. Backups run without SNAPSHOT present; most run without 16K card.

And there's more! Write or ring for complete technical information.

**PRICE: £95.00\***

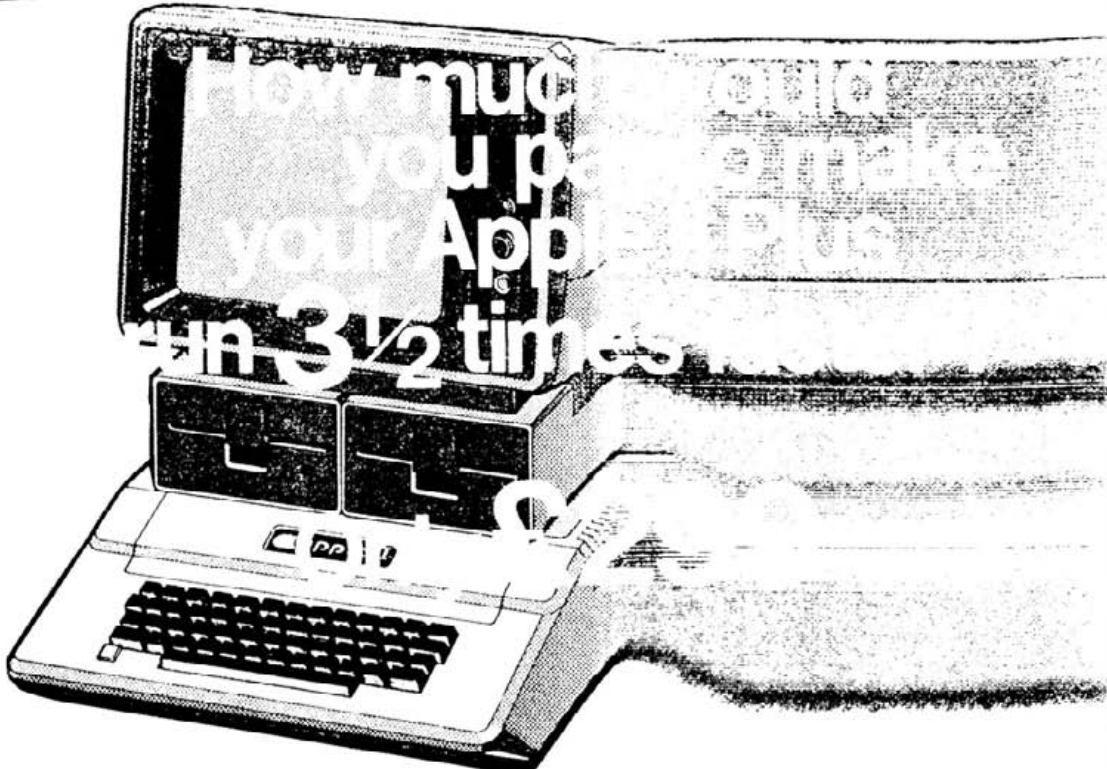
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### SAVES TIME

Imagine the time, energy, and frustration you could save by boosting your Apple's speed from 1 Mhz to 3.58 Mhz. That's 3½ times faster than normal, making the Apple II Plus arguably the fastest Micro on the market.

How is it possible? It's all down to ACCELERATOR II. This new plug-in board from Pete & Pam Computers contains a 6502C Processor and 64K of memory. The board runs all native Apple II software, including programs written in Applesoft, Integer, Machine Code, Pascal, Apple Fortran 77 and Forth.

Amongst the many thousands who could benefit from ACCELERATOR II are users of Visicalc, DB Master, Micro Modeller, Multiplan Tabs, and Systematics.

### SUPER FAST

In November 1982, PCW published a bumper round up of all the Benchmark Timings since PCW began. The Olivetti M20 came out top of the 'league' with an average Benchmark timing of 11.5. Running the same Benchmark test programs,

the Apple II Plus with Accelerator II averages a timing of 8.58 — that's an incredible 25% faster than the Olivetti M20.

We have reproduced some of PCW's findings, incorporating Benchmark Timings for the Apple II Plus with Accelerator II.

Machine	BM1	BM2	BM3	BM4	BM5	BM6	BM7	BM8	Average
Apple II Plus with Accelerator II	0.3	2.4	4.5	5.0	5.5	8.2	12.9	2.98	8.6
Olivetti M20	1.3	4.0	8.1	8.5	9.6	17.4	26.7	1.6	11.5
IBM Personal Computer	1.5	5.2	12.1	12.6	13.6	23.5	37.4	3.5	17.6
Osborne 01	1.4	4.4	11.7	11.6	12.3	21.9	34.9	6.1	19.9
Intertec Superbrain	1.6	5.2	14.0	13.9	14.8	26.3	43.2	5.6	21.9
Apple III	1.7	7.2	13.5	14.5	16.0	27.0	42.5	7.5	24.7
ACT Sirius 1	2.0	7.4	17.0	17.5	19.8	35.4	55.9	4.3	24.8
Xerox 820	1.7	5.5	15.5	15.1	16.2	28.9	46.1	8.0	26.1
Apple II	1.3	8.5	16.0	17.8	19.1	28.6	44.8	10.7	30.4
Commodore CBM 8032	1.7	10.0	18.4	20.3	21.9	32.4	51.0	11.9	34.3

So don't wait — start to save time now. Contact your local dealer, or call us on (0706) 212321, or, in London on 01-769 1022. A faster, easier computing life is on its way.

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